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Claims:

1. A network device, comprising:

a physical layer subsystem for transferring network data in accordance with a physical layer protocol and including a physical layer working port capable of being connected to a first physical network attachment;

an upper layer subsystem for transferring the network data in accordance with an upper layer protocol and coupled with the physical layer subsystem; and

wherein the physical layer subsystem further includes a physical layer test port coupled to the physical layer subsystem and the upper layer subsystem and capable of being connected to a second physical network attachment.

2. The network device of claim 1, wherein the physical layer subsystem further comprises:

a cross-connection subsystem for transferring the network data between the physical layer working port and the upper layer subsystem and multicasting a portion of the network data to the physical layer test port.

3. The network device of claim 2, wherein the cross-connection subsystem comprises a cross-connection card, the physical layer subsystem comprises a port card including the working port and the test port and connected to the cross-connection card, and the upper layer subsystem includes a forwarding card connected to the cross-connection card.

4. The network device of claim 2, wherein the cross-connection subsystem comprises a cross-connection card, wherein the physical layer subsystem comprises a first port card including the working port and a second port card including the test port, wherein the first and second port cards are connected to the cross-connection card, and the upper layer subsystem includes a forwarding card connected to the cross-connection card.

5. The network device of claim 4, wherein the first port card further includes a second test port.
6. The network device of claim 4, wherein the second port card further includes a second test port.
7. The network device of claim 4, wherein the physical layer subsystem further includes a third port card including a second test port and wherein the third port card is connected to the cross-connection card.
8. The network device of claim 2, wherein the cross-connection subsystem comprises a first cross-connection card and a second cross-connection card, wherein the physical layer subsystem comprises a first port card connected to the first cross-connection card and a second port card connected to the second cross-connection card, and wherein the upper layer subsystem comprises a first forwarding card connected to the first cross-connection card and a second forwarding card connected to the second cross-connection card.
9. The network device of claim 8, wherein the first and second cross-connection cards are connected and the first port card includes the working port and the second port card includes the test port.
10. The network device of claim 2, wherein the portion of the network data comprises a received portion of the network data.
11. The network device of claim 10, wherein the received portion of the network data comprises at least one path.
12. The network device of claim 2, wherein the portion of the network data comprises a transmit portion of the network data.

13. The network device of claim 12, wherein the transmit portion of the network data comprises at least one path.
14. The network device of claim 2, wherein the physical layer test port is a first physical layer test port and the physical layer subsystem further comprises:
a second physical layer test port coupled to the physical layer subsystem and the upper layer subsystem and capable of being connected to a third physical network attachment.
15. The network device of claim 14, wherein the cross-connection subsystem is further capable of multicasting another portion of the network data to the second physical layer test port.
16. The network device of claim 1, wherein the physical layer subsystem further comprises:
a cross-connection subsystem for transferring the network data from the upper layer subsystem to the physical layer working port and for transferring test data from the physical layer test port to the upper layer subsystem.
17. The network device of claim 1, wherein the physical layer working port is a first physical layer working port and wherein the physical layer subsystem further includes:
a second physical layer working port capable of being connected to a third physical network attachment; and
wherein the network device further includes:
a cross-connection subsystem for transferring the network data between the first and second physical layer working ports and the upper layer subsystem and for multicasting a first portion of the network data transferred between the first physical layer working port and the upper layer subsystem to the physical layer test port and for multicasting a second portion of the network data transferred between the second

physical layer working port and the upper layer subsystem to the physical layer test port.

18. The network device of claim 1, wherein the first physical network attachment comprises an input optical fiber and an output optical fiber.
19. The network device of claim 1, wherein the first physical network attachment comprises an input cable and an output cable.
20. The network device of claim 1, wherein the physical layer protocol comprises SONET.
21. The network device of claim 1, wherein the physical layer protocol comprises Ethernet.
22. The network device of claim 1, wherein the upper layer protocol comprises ATM.
23. The network device of claim 1, wherein the upper layer protocol comprises MPLS.
24. The network device of claim 1, wherein the upper layer protocol comprises IP.
25. The network device of claim 1, wherein the upper layer protocol comprises Frame Relay.
26. A network device, comprising:
 - an upper layer subsystem for transferring network data in accordance with an upper layer protocol; and
 - a physical layer subsystem for transferring the network data with the upper layer subsystem and including a plurality of ports capable of being connected to

physical network attachments, wherein the plurality of ports are capable of being programmed as physical layer test ports.

27. The network device of claim 26, wherein one of the plurality of ports is designated as a working port and one of the plurality of ports is designated as a test port and the physical layer subsystem further includes:

a cross-connection subsystem for transferring the network data between the upper layer subsystem and the working port and for multicasting a portion of the network data to the test port.

28. The network device of claim 27, wherein the test port is a first test port and another one of the plurality of ports is designated as a second test port and wherein the cross-connection subsystem is capable of multicasting another portion of the network data to the second test port.

29. The network device of claim 27, wherein the working port is a first working port and another one of the plurality of ports is designated as a second working port and wherein the cross-connection subsystem is capable of transferring the network data between the upper layer subsystem and the first and second working ports and for multicasting a first portion of the network data transferred between the upper layer subsystem and the first working port to the test port and a second portion of the network data transferred between the upper layer subsystem and the second working port to the test port.

30. The network device of claim 26, wherein one of the plurality of ports is designated as a working port and one of the plurality of ports is designated as a test port and the physical layer subsystem further includes:

a cross-connection subsystem for transferring the network data from the upper layer subsystem to the working port and for transferring data from the test port to the working port.

31. A network device, comprising:

an upper layer subsystem for transferring network data in accordance with an upper layer protocol;

a physical layer subsystem including a plurality of ports capable of being connected to physical network attachments, wherein the plurality of ports include a working port and a test port; and

a cross-connection subsystem coupled to the upper layer subsystem and the physical layer subsystem and capable of being programmed to transfer the network data between the upper layer subsystem and the working port and to multicast a portion of the network data to the test port.

32. The network device of claim 31, wherein the test port is a first test port, the plurality of ports further comprises a second test port and the cross-connection subsystem is further capable of being programmed to multicast another portion of the network data to the second test port.

33. The network device of claim 31, wherein the cross-connection subsystem is further capable of being programmed to send the network data from the upper layer subsystem to the working port and test data from the test port to the upper layer subsystem.

34. The network device of claim 31, wherein the working port is a first working port, the plurality of ports includes a second working port and the cross-connection card is further capable of being programmed to transfer the network data between the upper layer subsystem and the first and second working ports and to multicast a first portion of the network data transferred between the upper layer subsystem and the first working port to the test port and to multicast a second portion of the network data transferred between the upper layer subsystem and the second working port to the test port.

35. A method of operating a network device, comprising:

transferring network data between a physical layer working port within a physical layer subsystem and a physical network attachment capable of being coupled with another network device;

transferring network data between the working port and an upper layer subsystem; and

sending a copy of a portion of the network data transferred between the working port and the upper layer subsystem to a physical layer test port.

36. The method of claim 35, further comprising:

sending a copy of another portion of the network data transferred between the physical layer subsystem and the upper layer subsystem to the test port.

37. The method of claim 35, further comprising:

sending the copy of the portion of the network data transferred between the working port and the upper layer subsystem to another test port.

38. The method of claim 35, wherein sending a copy of a portion of the network data transferred between the working port and the upper layer subsystem to a physical layer test port comprises:

programming a cross-connection subsystem to provide connections between the working port, the upper layer subsystem and the test port.

39. The method of claim 38, further comprising:

re-programming the cross-connection subsystem to provide connections between the working port, the upper layer subsystem and another test port.

40. The method of claim 38, further comprising:

re-programming the cross-connection subsystem to provide connections between another working port, the upper layer subsystem and the test port.

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41. The method of claim 38, wherein sending a copy of a portion of the network data transferred between the working port and the upper layer subsystem to a physical layer test port comprises:

programming a cross-connection subsystem to provide connections between the working port and the upper layer subsystem and between a receiver of the working port and the test port.

42. The method of claim 35, wherein sending a copy of a portion of the network data transferred between the working port and the upper layer subsystem to a physical layer test port comprises:

programming a cross-connection subsystem to provide connections between the working port and the upper layer subsystem and between a transmitter of the upper layer subsystem and the test port.

43. The method of claim 35, wherein sending a copy of a portion of the network data transferred between the working port and the upper layer subsystem to a physical layer test port comprises:

programming a cross-connection subsystem to provide connections between a transmitter of the upper layer subsystem and a transmitter of the working port and between a receiver of the upper layer subsystem and a receiver of the test port.

44. The method of claim 35, wherein the portion of the network data comprises at least one path.

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